REMARKS

Claims 25, 34, 43 and 52 have been canceled without prejudice, and therefore claims 26 to 33, 35 to 42, 44 to 51 and 53 to 60 are now being considered.

Claims 1 to 24 and 61 to 72 were previously restricted, including claims 1 to 4, 7 to 10, 13 to 16 and 19 to 22 as to Invention I, claims 5, 6, 11, 12, 17, 18, 23, 24 as to Species 1 of Invention II and claims 61 to 72 of Species 3 of Invention II). These claims may be pursued in a further application(s).

Applicants respectfully request reconsideration of the present application in view of this response.

With respect to paragraph five (5) of the Office Action, Applicants thank the Examiner for indicating that claims 26 to 29, 31 to 33, 35 to 38, 40 to 42, 44 to 47, 49 to 51, 53 to 56 and 58 to 60 contain allowable subject matter. Accordingly, these claims have been rewritten as independent claims, which reflect the allowable subject matter of those claims. It is noted that the claims do not include the exact text of their base claims, but the claims as rewritten do include the allowable subject matter as indicated by the Examiner. Approval is respectfully requested.

With respect to paragraph three (3), claims 25, 30, 34, 39, 43, 48, 52 and 57 were rejected under 35 U.S.C. § 102(e) as anticipated by Zeng, U.S. Patent No. 6,373,974.

While the rejections may not be agreed with, to facilitate matters, claims 25, 34, 43 and 52 have been canceled without prejudice, and the dependencies of claims 30, 39, 48 and 57 have been changed so that these claims respectively depend from claims 26, 35, 44 and 53, which the Examiner has indicated include allowable subject matter. It is therefore respectfully requested that the rejections of these claims be withdrawn as moot.

In summary, it is respectfully submitted that claims 26 to 33, 35 to 42, 44 to 51, and 53 to 60 are allowable at least for the foregoing reasons.

CONCLUSION

In view of all of the above, it is believed that the objections to and the rejections of claims have been obviated, and that claims 26 to 33, 35 to 42, 44 to 51 and 53 to 60 are allowable. It is therefore respectfully requested that the objections and the rejections be

reconsidered and withdrawn, and that the present application issue as early as possible.

Respectfully Submitted,
KENYON & KENYON

Dated: 4/28/2003

By: ______________________
Aaron C. Deditch
(Reg. No. 33,865)

One Broadway
New York, NY 10004
(212) 425-7200

CUSTOMER NO. 26646

587403

AMENDMENT VERSION WITH MARKINGS

IN THE CLAIMS:

Without prejudice, please cancel claims 25, 34, 43 and 52 as requested above, and please amend the claims as follows:

26. (Amended) A method for reading digital watermark data embedded in digital data contents, said method comprising the steps of: [The method as claimed in claim 25, further comprising the steps of:]

receiving said digital data contents;

determining threshold $\propto$ of reliability of digital watermark data which is read;

obtaining a binary distribution function $F(x)$ which represents a probability that a number x of '1' bits or '0' bits are included in a bit sequence which is read at random from digital data contents, said binary distribution function $F(x)$ being obtained by using a probability q of reading '1' or '0' in said bit sequence and a repeating number of embedding each bit of digital watermark data;

reading an ith digital watermark sequence of said digital watermark data from a digital watermark area of said digital data contents;

calculating the number k_i of '1' or '0' included in said digital watermark sequence;

calculating a probability $F(k_i)$ by using said binary distribution function $F(x)$; and

reconstituting '1' or '0' from ith digital watermark data w_i if $F(k_i) > \propto$, reconstituting '0' or '1' from ith digital watermark data w_i if $1\text{-}F(k_i) > \propto$, and determining that there is no watermark data or the presence is unknown if both of $F(k_i) > \propto$ and $1\text{-}F(k_i) > \propto$ are not satisfied.

28. (Amended) A method for reading digital watermark data embedded in digital data contents, said method comprising the steps of: [The method as claimed in claim 25, further comprising the steps of:]

receiving said digital data contents;

determining a threshold $\propto$ of reliability of digital watermark data which is read;

obtaining a binary distribution function $F(x)$ which represents a probability that a number x of '1' bits or '0' bits are included in a bit sequence which is read at random from

digital data contents, said binary distribution function F(x) being obtained by using a probability q of reading '1' or '0' in said bit sequence and a repeating number of embedding each bit of digital watermark data;

reading an ith digital watermark sequence of said digital watermark data from a digital watermark area of said digital data contents;

checking whether a probability that said digital watermark sequence is digital watermark data exceeds said threshold ∝ by using said binary distribution function F(x); and

reconstituting digital watermark data from said digital watermark sequence by using majority decision processing if said probability exceeds ∝, and determining that there is no watermark data or the presence is unknown if said probability does not exceed ∝.

30. (Amended) The method as claimed in claim [25] <u>26</u>, if a data sequence which is embedded as said digital watermark data is modulated by a pseudo-random sequence, said method further comprising the steps of:

demodulating said [bit sequence] <u>digital watermark sequence</u> by said pseudo-random sequence; and

reconstituting digital watermark data from said demodulated [bit sequence] <u>digital watermark sequence</u>.

31. (Amended) <u>A method for reading digital watermark data embedded in digital data contents,</u> [The method as claimed in claim 25, further comprising the steps of:] if a data sequence which is embedded as said digital watermark data is modulated by a pseudo-random sequence, said method [further] comprising the steps of:

<u>receiving said digital data contents;</u>

determining a threshold ∝ of reliability of digital watermark data which is read;

obtaining a binary distribution function F(x) which represents a probability that a number of x of '1' bits or '0' bits are included in a bit sequence which is read at random from digital data contents, said binary distribution function F(x) being obtained by using a probability q of reading '1' or '0' in said bit sequence and a repeating number of embedding each bit of digital watermark data;

reading an ith digital watermark sequence of said digital watermark data from a digital watermark area of said digital data contents;

demodulating said digital watermark sequence by said pseudo-random sequence;

assigning ½ to said probability q;

obtaining a maximum number x_0 which satisfies $0 \leq F(x=x_0) \leq 1-\propto$ and a minimum number x_1 which satisfies $\propto \leq (x=x_1) \leq 1$;

obtaining the number k_i of '1' or '0' included in said ith digital watermark sequence; and

reconstituting ith digital watermark data w_i as '0' or '1' if $k_i \leq x_0$, and reconstituting said ith digital watermark data w_i as '1' or '0' if $k_i \geq x_i$.

32. (Amended) A method for reading digital watermark data embedded in digital data contents; [The method as claimed in claim 25, further comprising the steps of:] if a data sequence which is embedded as said digital watermark data is modulated by a pseudo-random sequence, said method [further] comprising the steps of:

receiving said digital data contents;

determining a threshold $\propto$ of reliability of digital watermark data which is read;

obtaining a binary distribution function F(x) which represents a probability that x of '1' bits or '0' bits are included in a bit sequence which is read at random from digital data contents, said binary distribution function F(x) being obtained by using a probability q of reading '1' or '0' in said bit sequence and a repeating number t of embedding each bit of digital watermark data;

reading an ith digital watermark sequence of said digital watermark data from a digital watermark area of said digital data contents;

demodulating said digital watermark sequence by said pseudo-random sequence;

assigning ½ to said probability q;

obtaining x_0 or x_1 which satisfies $0 \leq F(x=x_0) \leq 1-\propto$ or $\propto \leq (x=x_1) \leq 1$;

determining whether a value is equal to or less than x_0 or equal to or more than x_1, said value being a mean value of absolute values of a difference between the number of '0' or '1' included in said ith digital watermark sequence and a central value q X t of a binary

distribution;

reconstituting digital watermark data by performing majority decision processing for said ith digital watermark sequence if said value is equal to or less than x_0 or equal to or more than x_1; and

determining that there is no digital watermark data or the presence is unknown if said value is not equal to or less than x_0 or equal to or more than x_1.

35. (Amended) An apparatus for reading digital watermark data embedded in digital data contents, said apparatus comprising: [The apparatus as claimed in claim 34, further comprising:]

means for receiving said digital data contents;

means for obtaining a binary distribution function F(x) which represents a probability that a number x of '1' bits or '0' bits are included in a bit sequence which is read at random from digital data contents, said binary distribution function F(x) being obtained by using a probability q of reading '1' or '0' in said bit sequence and a repeating number of embedding each bit of digital watermark data;

means for reading an ith digital watermark sequence of said digital watermark data from a digital watermark area of said digital data contents;

means for calculating the number k_i of '1' or '0' included in said digital watermark sequence;

means for calculating a probability $F(k_i)$ by using said binary distribution function F(x); and

means for reconstituting '1' or '0' from ith digital watermark data w_i if $F(k_i) > \propto$, reconstituting '0' or '1' from ith digital watermark data w_i if $1-F(k_i)>\propto$, and, determining that there is no watermark data or the presence is unknown if both of $F(k_i)>\propto$ and $1-F(k_i)>\propto$ are not satisfied, $\propto$ being a threshold of reliability of digital watermark data which is read.

37. (Amended) An apparatus for reading digital watermark data embedded in digital data contents, said apparatus comprising: [The apparatus as claimed in claim 34, further

AMENDMENT VERSION WITH MARKINGS

comprising:]

means for receiving said digital data contents;

means for obtaining a binary distribution function F(x) which represents a probability that a number x of '1' bits or '0' bits are included in a bit sequence which is read at random from digital data contents, said binary distribution function F(x) being obtained by using a probability q of reading '1' or '0' in said bit sequence and a repeating number of embedding each bit of digital watermark data;

means for reading an ith digital watermark sequence of said digital watermark data from a digital watermark area of said digital data contents;

means for checking whether a probability that said digital watermark sequence is digital watermark data exceeds said threshold $\propto$ by using said binary distribution function F(x), $\propto$ being a threshold of reliability of digital watermark data which is read; and

means for reconstituting and generating digital watermark data from said digital watermark sequence by using majority decision processing if said probability exceeds $\propto$, and, determining that there is no watermark data or the presence is unknown if said probability does not exceed $\propto$.

39. (Amended) The apparatus as claimed in claim [34] 35, if a data sequence which is embedded as said digital watermark data is modulated by a pseudo-random sequence, said apparatus further comprising:

means for demodulating said [bit sequence] digital watermark sequence by said pseudo-random sequence; and

means for reconstituting digital watermark data from said demodulated [bit sequence] digital watermark sequence.

40. (Amended) An apparatus for reading digital watermark data embedded in digital data contents [The apparatus as claimed in claim 34], if a data sequence which is embedded as said digital watermark data is modulated by a pseudo-random sequence, said apparatus [further] comprising:

means for receiving said digital data contents:

means for obtaining a binary distribution function F(x) which represents a probability that a number x of '1' bits or '0' bits are included in a bit sequence which is read at random from digital data contents, said binary distribution function F(x) being obtained by using a probability q of reading '1' or '0' in said bit sequence and a repeating number of embedding each bit of digital watermark data;

means for reading an ith digital watermark sequence of said digital watermark data from a digital watermark area of said digital data contents;

means for demodulating said digital watermark sequence by said pseudo-random sequence;

means for assigning ½ to said probability q;

means for obtaining a maximum number x_0 which satisfies $0 \le F(x=x_0) \le 1-\propto$ and a minimum number x_1 which satisfies $\propto \le F(x=x_1) \le 1$, $\propto$ being a threshold of reliability of digital watermark data which is read;

means for obtaining the number k_i of '1' or '0' included in said ith digital watermark sequence; and

means for reconstituting ith digital watermark data w_i as '0' or '1' if $k_i \le x_0$, and, reconstituting said ith digital watermark data w_i as '1' or '0' if $k_i \ge x_1$.

41. (Amended) <u>An apparatus for reading digital watermark data embedded in digital data contents:</u> [The apparatus as claimed in claim 34], if a data sequence which is embedded as said digital watermark data is modulated by a pseudo-random sequence, said apparatus [further] comprising:

<u>means for receiving said digital data contents;</u>

means for obtaining a binary distribution function F(x) which represents a probability that a number x of '1' bits or '0' bits are included in a bit sequence which is read at random from digital data contents, said binary distribution function F(x) being obtained by using a probability q of reading '1' or '0' in said bit sequence and a repeating number t of embedding each bit of digital watermark data;

means for reading an ith digital watermark sequence of said digital watermark data from a digital watermark area of said digital data contents;

means for demodulating said digital watermark sequence by said pseudo-random sequence;

means for assigning ½ to said probability q;

means for obtaining x_0 or x_1 which satisfies $0 \leq F(x=x_0) \leq 1-\propto$ or $\propto \leq F(x=x_1) \leq 1$, $\propto$ being a threshold of reliability of digital watermark data which is read;

means for determining whether a value is equal to or less than x_0 or equal to or more than x_1, said value being a mean value of absolute values of a difference between the number of '0' or '1' included in said ith digital watermark sequence and a central value q X t of a binary distribution;

means for reconstituting digital watermark data by performing majority decision processing for said ith digital watermark sequence if said value is equal to or less than x_0 or equal to or more than x_1; and

means for determining that there is no digital watermark data or the presence is unknown if said value is not equal to or less than x_0 or equal to or more than x_1.

44. (Amended) <u>An integrated circuit for reading digital watermark data embedded in digital data contents, said integrated circuit comprising:</u> [The integrated circuit as claimed in claim 43, further comprising:]

<u>means for receiving said digital data contents;</u>

means for obtaining a binary distribution function F(x) which represents a probability that a number x of 'l' bits or '0" bits are included in a bit sequence which is read at random from digital data contents, said binary distribution function F(x) being obtained by using a probability q of reading '1' or '0' in said bit sequence and a repeating number of embedding each bit of digital watermark data;

means for reading an ith digital watermark sequence of said digital watermark data from a digital watermark area of said digital data contents;

means for calculating the number k_i of '1' or '0' included in said digital watermark sequence;

means for calculating a probability $F(k_i)$ by using said binary distribution function F(x); and

AMENDMENT VERSION WITH MARKINGS

means for reconstituting '1' or '0' from ith digital watermark data w_i if $F(k_i)>\propto$, reconstituting '0' or '1' from ith digital watermark data w_i if $1-F(k_i)>\propto$, and determining that there is no watermark data or the presence is unknown if both of $F(k_i)>\propto$ and $1-F(k_i)>\propto$ are not satisfied, $\propto$ being a threshold of reliability of digital watermark data which is read.

46. (Amended) <u>An integrated circuit for readinq digital watermark data embedded in digital_data contents, said integrated circuit comprising:</u> [The integrated circuit as claimed in claim 43, further comprising:]

<u>means for receiving said digital data contents;</u>

means for obtaining a binary distribution function F(x) which represents a probability that a number of x of '1' bits or '0' bits are included in a bit sequence which is read at random from digital data contents, said binary distribution function F(x) being obtained by using a probability q of reading 'l' or '0' in said bit sequence and a repeating number of embedding each bit of digital watermark data;

means for reading an ith digital watermark sequence of said digital watermark data from a digital watermark area of said digital data contents;

means for checking whether a probability that said digital watermark sequence is digital watermark data exceeds said threshold a by using said binary distribution function F(x), $\propto$ being a threshold of reliabilitv of digital watermark data which is read; and

means for reconstituting and generating digital watermark data from said digital watermark sequence by using majority decision processing if said probability exceeds $\propto$, and, determining that there is no watermark data or the presence is unknown if said probability does not exceed $\propto$.

48. (Amended) The integrated circuit as claimed in claim [43] <u>44</u>, if a data sequence which is embedded as said digital watermark data is modulated by a pseudo-random sequence, said integrated circuit further comprising:

means for demodulating said [bit sequence] <u>digital watermark sequence</u> by said pseudo-random sequence; and

means for reconstituting digital watermark data from said demodulated [bit sequence]

digital watermark sequence.

49. (Amended) An integrated circuit for reading digital watermark data embedded in digital data contents [The integrated circuit as claimed in claim 43], if a data sequence which is embedded as said digital watermark data is modulated by a pseudo-random sequence, said integrated circuit [further] comprising:

means for receiving said digital data contents;

means for obtaining a binary distribution function. F(x) which represents a probability that a number x of '1' bits or '0' bits are included in a bit sequence which is read at random from digital data contents, said binary distribution function F(x) being obtained by using a probability q of reading '1' or '0' in said bit sequence and a repeating number of embedding each bit of digital watermark data;

means for reading an ith digital watermark sequence of said digital watermark data from a digital watermark area of said digital data contents;

means for demodulating said digital watermark sequence by said pseudo-random sequence;

means for assigning ½ to said probability q;

means for obtaining a maximum number x_0 which satisfies $0 \leq F(x=x_0) \leq 1-\propto$ and a minimum number x_1 which satisfies a $\propto \leq F(x=x_1) \leq 1$, $\propto$ being a threshold of reliability of digital watermark data which is read; and

means for obtaining the number k_i of '1' or '0' included in said ith digital watermark sequence;

means for reconstituting ith digital watermark data w_i as '0' or '1' if $k_i \leq x_0$, and, reconstituting said ith digital watermark data w_i as '1' or '0' if $k_i \leq x_1$.

50. (Amended) An integrated circuit for reading digital watermark data embedded in digital data contents [The integrated circuit as claimed in claim 43], if a data sequence which is embedded as said digital watermark data is modulated by a pseudo-random sequence, said integrated circuit [further] comprising:

means for receiving said digital data contents;

means for obtaining a binary distribution function F(x) which represents a probability that a number x of '1' bits or '0' bits are included in a bit sequence which is read at random from digital data contents, said binary distribution function F(x) being obtained by using a probability q of reading '1' or '0' in said bit sequence and a repeating number t of embedding each bit of digital watermark data;

means for reading an ith digital watermark sequence of said digital watermark data from a digital watermark area of said digital data contents;

means for demodulating said digital watermark sequence by said pseudo-random sequence;

means for assigning ½ to said probability q;

means for obtaining x_0 or x_1 which satisfies $0 \leq F(x=x_0) \leq 1-\propto$ or $\propto \leq F(x=x_1) \leq 1$, $\propto$ being a threshold of reliability of digital watermark data which is read;

means for determining whether a value is equal to or less than x_0 or equal to or more than x_1, said value being a mean value of absolute values of a difference between the number of '0' or '1' included in said ith digital watermark sequence and a central value q X t of a binary distribution;

means for reconstituting digital watermark data by performing majority decision processing for said ith digital watermark sequence if said value is equal to or less than x_0 or equal to or more than x_1; and

means for determining that there is no digital watermark data or the presence is unknown if said value is not equal to or less than x_0 or equal to or more than x_1.

53. (Amended) <u>A computer readable medium storing program code for causing a computer system to read digital watermark data embedded in digital data contents, said computer readable medium comprising:</u> [The computer readable medium as claimed in claim 52, further comprising:]

<u>program code means for receiving said digital data contents;</u>

program code means for obtaining a binary distribution function F(x) which represents a probability that a number x of '1' bits or '0' bits are included in a bi: sequence which is read at random from digital data contents, said binary distribution function F(x)

being obtained by using a probability a of reading '1' or '0' in said bit sequence and a repeating number of embedding each bit of digital watermark data;

program code means for reading an ith digital watermark sequence of said digital watermark data from a digital watermark area of said digital data contents;

program code means for calculating the number k_i of '1' or '0' included in said digital watermark sequence; and

program code means for calculating a probability $F(k_i)$ by using said binary distribution function $F(x)$;

program code means for reconstituting '1' or '0' from ith digital watermark data w_i if $F(k_i) > \propto$, reconstituting '0' or '1' from ith digital watermark data w_i if $1-F(k_i) > \propto$, and, determining that there is no watermark data or the presence is unknown if both of $F(k_i) > \propto$ and $1-F(k_i) > \propto$ are not satisfied, $\propto$ being a threshold of reliability of digital watermark data which is read.

55. (Amended) <u>A computer readable medium storing program code for causing a computer system to read digital watermark data embedded in digital data contents, said computer readable medium comprising:</u> [The computer readable medium as claimed in claim 52, further comprising:]

<u>program code means for receiving said digital data contents;</u>

program code means for obtaining a binary distribution function $F(x)$ which represents a probability that a number x of '1' bits or '0' bits are included in a bi: sequence which is read at random from digital data contents, said binary distribution function $F(x)$ being obtained by using a probability a of reading '1' or '0' in said bit sequence and a repeating number of embedding each bit of digital watermark data;

program code means for reading an ith digital watermark sequence of said digital watermark data from a digital watermark area of said digital data contents;

program code means for checking whether a probability that said digital watermark sequence is digital watermark data exceeds said threshold $\propto$ by rising said binary distribution function $F(x)$, $\propto$ being a threshold of reliability of digital watermark data which is read; and

program code means for reconstituting and generating digital watermark data from

said digital watermark sequence by using majority decision processing if said probability exceeds $\propto$, and determining that there is no watermark data or the presence is unknown if said probability does not exceed $\propto$.

57. (Amended) The computer readable medium as claimed in claim [52] <u>53</u>, if a data sequence which is embedded as said digital watermark data is modulated by a pseudo-random sequence, said computer readable medium further comprising:

program code means for demodulating said [bit sequence] <u>digital watermark sequence</u> by said pseudo-random sequence; and

program code means for reconstituting digital watermark data from said demodulated [bit sequence] <u>digital watermark sequence</u>.

58. (Amended) <u>A computer readable medium storing program code for causing a computer system to read digital watermark data embedded in digital data contents</u> [The computer readable medium as claimed in claim 52], if data sequence which is embedded as said digital watermark data is modulated by a pseudo-random sequence, said computer readable medium [further] comprising:

<u>program code means for receiving said digital data contents;</u>

program code means for obtaining a binary distribution function. F(x) which represents a probability that a number x of '1' bits or '0' bits are included in a bit sequence which is read at random from digital data contents, said binary distribution function F(x) being obtained by using a probability q of reading '1' or '0' in said bit sequence and a repeating number of embedding each bit of digital watermark data;

program code means for reading an ith digital watermark sequence of said digital watermark data from a digital watermark area of said digital data contents;

program code means for demodulating said digital watermark sequence by said pseudo-random sequence;

program code means for assigning ½ to said probability q;

program code means for obtaining a maximum number x_0 which satisfies $0 \leq F(x=x_0) \leq 1-\propto$ and a minimum number x_1 which satisfies a $\propto \leq F(x=x_1) \leq 1$, $\propto$ being a

threshold of reliability of digital watermark data which is read; and

program code means for obtaining the number k_i of '1' or '0' included in said ith digital watermark sequence;

program code means for reconstituting ith digital watermark data w_i as '0' or '1' if $k_i \leq x_0$, and, reconstituting said ith digital watermark data w_i as '1' or '0' if $k_i \leq x_1$.

59. (Amended) <u>A computer readable medium storing program code for causing a computer system to read digital watermark data embedded in digital data contents</u> [The computer readable medium as claimed in claim 52], if data sequence which is embedded as said digital watermark data is modulated by a pseudo-random sequence, said computer readable medium [further] comprising:

<u>program code means for receiving said digital data contents;</u>

program code means for obtaining a binary distribution function F(x) which represents a probability that a number x of '1' bits or '0' bits are included in a bit sequence which is read at random from digital data contents, said binary distribution function F(x) being obtained by using a probability q of reading '1' or '0' in said bit sequence and a repeating number t of embedding each bit of digital watermark data;

program code means for reading an ith digital watermark sequence of said digital watermark data from a digital watermark area of said digital data contents;

program code means for demodulating said digital watermark sequence by said pseudo-random sequence;

program code means for assigning ½ to said probability q;

program code means for obtaining x_0 or x_1 which satisfies $0 \leq F(x=x_0) \leq 1-\propto$ or $\propto \leq F(x=x_1) \leq 1$, $\propto$ being a threshold of reliability of digital watermark data which is read;

program code means for determining whether a value is equal to or less than x_0 or equal to or more than x_1, said value being a mean value of absolute values of a difference between the number of '0' or '1' included in said ith digital watermark sequence and a central value q X t of a binary distribution;

program code means for reconstituting digital watermark data by performing majority decision processing for said ith digital watermark sequence if said value is equal to or less

than x_0 or equal to or more than x_1; and

program code means for determining that there is no digital watermark data or the presence is unknown if said value is not equal to or less than x_0 or equal to or more than x_1.